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United States Patent [19][11] **Patent Number:** **5,638,084****Kalt**[45] **Date of Patent:** **Jun. 10, 1997**[54] **LIGHTING-INDEPENDENT COLOR VIDEO DISPLAY**5,340,619 8/1994 Chen et al. 427/498
5,401,616 3/1995 Isomi et al. 430/258[75] **Inventor:** **Charles G. Kalt**, Williamstown, Mass.**FOREIGN PATENT DOCUMENTS**

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[73] **Assignee:** **Dielectric Systems International, Inc.**,
North Adams, Mass.**OTHER PUBLICATIONS**[21] **Appl. No.:** **681,606**Gary Stix, Staff Writer <<Micron Machinations>> Nov.
1992 pp. 107-117 Scientific American.[22] **Filed:** **Jul. 29, 1996***Primary Examiner*—Richard Hjerpe*Assistant Examiner*—Lun-Yi Lao*Attorney, Agent, or Firm*—Handal & Morofsky**Related U.S. Application Data**[63] Continuation of Ser. No. 228,111, Apr. 15, 1994, abandoned,
which is a continuation-in-part of Ser. No. 66,949, May 24,
1993, Pat. No. 5,519,565, which is a continuation-in-part of
Ser. No. 887,714, May 22, 1992, Pat. No. 5,231,559.[51] **Int. Cl.⁶** **G09G 3/04**[52] **U.S. Cl.** **345/31; 345/85; 359/230;**
361/280[58] **Field of Search** 345/84, 85, 108,
345/206, 88, 31, 48; 359/230, 223, 231,
291; 313/459; 361/280, 281

[57]

ABSTRACT

An electrostatically actuated color video display is disclosed which can be illuminated by backlighting transmitted through the display and by reflected ambient light to have good visibility in both bright daylight and in subdued or dim light. To display full-color dynamically changing images from an electronic video signal the functions of creating the image and of generating color light rays for use in the image are separated. A preferred embodiment employs a pixellated color screen having rectangular cells of alternate red, green, blue and a somewhat opaque white color and a shuttering mask comprising an array of selectively actuatable light-modulating capacitors with black movable electrodes that when retracted are in registration with and present an open light path to individual color screen cells and when extended present a continuous black screen appearance.

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